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THE PRESENT AND PROJECTED AGRICULTURAL ECONOMY OF THE MOBILE-ALABAMA-COOSA RIVER BASINS. PART I. THE AGRICULTURAL ECONOMY

Auburn University
Auburn, Alabama

June 1967

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Part I - The Agricultural Economy

AGRICULTURAL EXPERIMENT STATION
of AUBURN UNIVERSITY
E. V. Smith, Director Auburn, Alabama

UNDER CONTRACTUAL AGREEMENT WITH
UNITED STATES DEPARTMENT OF THE INTERIOR
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Part I - The Agricultural Economy

A report prepared under terms of a contract research project between the United States Department of Interior, Federal Water Pollution Control Administration, and the Agricultural Experiment Station of Auburn University, Auburn, Alabama

J. Homer Blackstone, Project Leader

Department of Agricultural Economics and Rural Sociology
Agricultural Experiment Station
Auburn University
Auburn, Alabama

June 1967

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THE PRESENT AND PROJECTED AGRICULTURAL ECONOMY OF THE MOBILE-ALABAMA-COOSA RIVER BASINS*

J. Homer Blackstone, Project Leader**

The Mobile-Alabama-Coosa River Basins as used in this study, include 13 Georgia counties and 24 Alabama counties that are a normal part of the drainage area of the three river systems. In addition, four counties - Blount, Jefferson, Mobile and Walker - were added to the study area because of their particular relationship to the Basins with respect to population growth and potential water use from these river systems. Combined, the study area consisted of 41 counties in two states, Figure 1.

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*The research activities on which this report is based were financed under provisions and terms of a contract between the United States Department of Interior, Federal Water Pollution Control Administration, and the Agricultural Experiment Station of Auburn University, Auburn, Alabama. All research activities incident to this contract were planned, organized, exectued, and coordinated by personnel in the Department of Agricultural Economics and Rural Sociology. These activities were covered by Alabama State research project Number 1-032.

**The assistance and cooperation throughout this study of persons associated with Federal, State, and private agencies, organizations, and groups is gratefully acknowledged. Specific acknowledgement is due the Bureau of Business Research, University of Alabama for aiding in the coordination of this project with a similar project they were working on regarding the overall economic base of the study area. Special acknowledgement is due Mr. Marvin Julich and Mr. James Barnes for the handling of selected parts of this study.

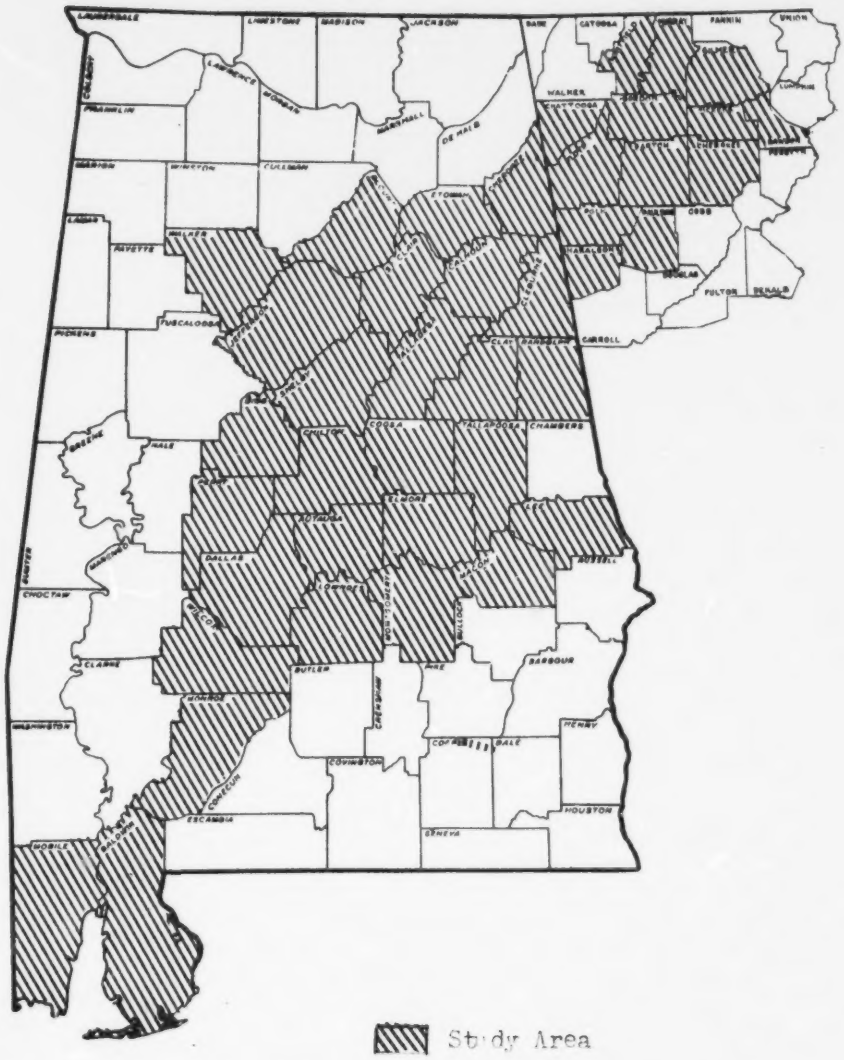

Figure 1. Mobile-Alabama-Coosa River Basins

In 1964, the study area consisted of 16,577,280 acres of land. Some 92 percent of the land area of the 41 counties is presently used for the production of food, fiber, and wood products. The remaining 8 percent is used for urban areas, roads, airports, industrial sites, parks, and miscellaneous purposes. While nonagricultural uses of land are expected to grow rapidly in the study area in the future, much land will remain for future use by agriculture.

Widespread and dramatic changes have occurred in the agricultural and forestry sectors of the national economy over the past half century. This has also been true in the Mobile-Alabama-Coosa River Basins. However, in a growing industrial economy it is quite easy to overlook the importance of agriculture to man. While it is seldom mentioned, it is true that the total farm output in 1965 was almost double that of 1920.

Most of the changes in agriculture, especially the increased production, has occurred since World War II. Startling changes came about in agribusiness, including the farm supply business, production on farms, and processing and distribution of farm products to ultimate consumers. At times, the production of some food and fiber products has been in surplus, and large quantities of some products were placed in storage. To a degree, American agriculture still possesses a potential to over produce, but this could largely occur only as a result of misdirected production of selected products. More important today is the development of agriculture's role in helping to prepare this nation, and the world, for the future. Recent world food trends

indicate that production must go up or consumption will come down.

During the past 20 to 30 years major changes have occurred in the agricultural and forestry industries of the study area. These include basic changes in land use, land tenure, size and type of farm, and farm income. Expected changes in the nation's future growth in population, employment, income, and food habits will lead to a higher demand for food, feed, fiber, and timber products. Past changes in the study area indicate that additional changes in the future will be made as the area attempts to adjust to the nation's agricultural needs for products for domestic use and for export. The study area has a large underutilized agricultural potential. The best use that can be made of the resources of the area, however, can be made only when proper guidance is given to this development.

Method of Study

Information relative to the present use of agricultural resources was brought together from many sources. These included both secondary and primary data. Much of the background data is published in two volumes as supporting material--PartIV, Section A and Part IV, Section B. Two volumes were used for convenience in binding the large mass of data available.

Available data were analyzed in order to develop a better understanding of the changes that were occurring in the present use of agriculture resources. This background provided many insights into the potentials for further development in the use of these

resources in the future. The potential of the study area was considered in the development of projections of future production.

Present indications are that requirements for land and water for agriculture, urban development, industry, and recreation will increase in the future in the study area. At the same time, the requirements for food and fiber production from the study area will increase. The purpose of this report is to present a "word picture" of the agricultural resources of the study area and to present the future importance of the agricultural economy as a part of the overall economic development of the study area. No attempt is made to provide specific recommendations on resource use. Rather, the attempt is to provide information that will be helpful in decision-making. Additional data on "method of study" will be given as a part of specific sections of this report.

Assumptions and Limitations

In order to discuss the future economy of any business or industry, it is necessary that time periods be established and some assumptions and limitations be spelled out. For the purposes of this study three time periods were used--past, present, and future. In the basic tables shown in this report these time periods were 1959, 1964 1980, and 2015. Historical data were developed back to 1949 for most items. These data are shown in the Appendix Tables but space did not permit their being used in the written report.

Agricultural production needs are closely population oriented. Consequently, the projected requirements of the future are tied to

a projected population for 1980 and 2015. Should the projected levels of population occur earlier or later than the indicated dates, the agricultural requirements would need to be speeded up or slowed down. In other words, the two future time periods are 1980 plus or minus two or three years, and 2015 plus or minus eight or ten years.

Projections of the agricultural economy of the Mobile-Alabama-Coosa River Basins for 1980 and 2015 were developed under the following general assumptions: (1) There will be no disrupting shifts in the economic, political, and social institutions that set the patterns of life in the nation and the study area during the period covered. (2) The free enterprise system will continue. (3) There will be no "all-out" wars involving a majority of the national and local economy in a war effort. (4) A major business depression will not occur during the projected period. Conditions of prosperity will continue and a reasonably stable general price level will be maintained. During the projected period, reasonably full employment, rising production rates, and increasing personal incomes will prevail. (5) The nation and the study area will continue to have an upward trend in population. (6) Per capita consumption of most food products will continue at present levels. However, some selected products, such as meats and vegetables, will show an increase and others, potatoes for example, a slight decrease. International trade will maintain an upward trend for most agricultural products, with food grains and fats and oils being critical demand items.

It is assumed that government policies and programs will be consistent with the preceding assumptions to the extent that economic growth and development of resources necessary to that growth will continue to be implemented and encouraged. It is expected that agricultural prices will be more closely related to the market place and that more exports will move as an actual purchase. Pressure will continue to exist to replace farm labor with capital. Competition within the farm industry is gathering momentum as capital, land, and other agricultural resources move into the hands of stronger managers. This trend is expected to continue.

It is beyond the power of the professional agricultural worker to predict with a high degree of accuracy what will happen in the Mobile-Alabama-Coosa River Basins over the next 50 years. Trends that have been underway in the area since World War II give some good indications of expected future happenings. The development of the Basin's full potential depends in large part on the ability and willingness of local people and leaders to respond to prevailing opportunities. The projections in this study should not be interpreted as precise figures for the projected target dates in the study area. Rather, they should be considered as general directions and patterns that are expected to prevail. However, the projections should be useful for decision-making purposes.

Projections were first made for the nation as a whole. They were then developed on a "step-down" basis to Alabama and Georgia. As a third step, the two-state area was "step-downed" to the 41

county area. The Basin's totals were then prorated among the 41 counties based on historical performance, resources available, and other factors. The larger size of the total area--nation, two states, three basins--allowed for a greater degree of relative reliability of the projections than would be true for projections of any one county.

The Economic Base

A number of economic indicators help explain the historical demand for agricultural products and provide insights into possible future demands. Among these indicators are population, number of households, employment, and income, Table 1.

Table 1. Summary of Major Economic Indicators for the United States, 1940, 1950, 1960, and Projections for 1980 and 2015

Item	Unit	Historical			Projections	
		1940	1950	1960	1980	2015
Population	millions	131.7	150.7	179.3	254.0	459.0
Number of households	millions	35.1	43.6	52.6	74.5	138.0
Labor force	millions	52.6	64.7	73.1	104.5	189.0
Employment	millions	48.1	61.4	69.2	100.0	181.0
Personal income	mil. dols. (1962 dols.)	169.6	283.6	407.3	762.0	2,724.0
Per capita income	dollars (1962 dols.)	1,288	1,882	2,272	3,000	5,935

Source: U. S. Army Engineer District, Corps of Engineers, Mobile Alabama. From contract study by Michael Baker, Jr.

It is not expected that the study area will make the same percentage changes as the nation from one time period to the next. It is expected that the study area will move in the same direction as

the nation, but on some specific items the local change may be at a higher or lower percentage rate than that for the nation as whole.

The projected per capita income in the economic base beyond 1980 should be sufficient for most consumers to afford the kind of diet they will desire. Therefore, changes in per capita food demand due to changes in income probably will be negligible beyond 1980.

Current relative price relationships among individual commodities were assumed to continue. Medical developments, food fads, and synthetic materials will influence trends in consumption of agricultural products to a much lesser degree in the future than will population growth. A continuing trend toward more costly foods and a slightly increasing per capita consumption of meats and oil crops are expected.

Population Growth

Future agricultural needs are closely related to future population levels. Experts on population agree that the national population will increase for the next several decades. In 1940, the United States had a population of 131.7 million, Table 1. Twenty years later, in 1960, the total population was 179.3 million. The nation's population will pass the 200 million mark during 1967. National population is projected to be 254.0 million by 1980 and 459.0 million by 2015.

No attempt was made in this study to project the population of the two states, or the specific 41 counties, involved in the study area. However, assumptions were made about the population in these

areas, Table 2. This was necessary in order to have ideas on the local demand for agricultural products. Most agricultural production in the study area will be for a much larger market than that of the local area.

Table 2. Total Population of Alabama, Georgia, and the Mobile-Alabama-Coosa River Basins, 1950, 1960, 1965, and Estimates for 1980 and 2015

Area	Unit	Historical			Estimated	
		1950	1960	1965	1980	2015
Alabama	million	3.1	3.3	3.5	4.3	6.9
Georgia	million	3.4	3.9	4.4	5.6	9.3
Mobile-Alabama-Coosa River Basins	million	2.0	2.3	2.4	3.1	5.0

Population in Alabama was estimated to increase by 30 percent from 1960 to 1980. During the same time period, the population of Georgia was estimated to increase by 44 percent. The population of the study area was estimated to increase by 35 percent from 1960 to 1980.

While the total population of the two states and the study area has increased from 1950 to 1965, and is expected to continue increasing to 2015, the rural farm population has been decreasing. The decrease in the rural farm population is expected to continue in the study area. The present and projected rural farm population in the Mobile-Alabama-Coosa River Basins, by years, is as follows:

Years	Population
1950	456,308
1960	161,764
1965	139,850
1980	108,030
2015	87,750

Total population has been increasing in the study area. The

expectation is that this growth will continue. Likewise, the rural farm population has been decreasing and is expected to continue to do so. This means that the growth is expected to occur in the urban areas, and in non-farm rural areas. The major growth is expected to be in urban areas.

Industrial developments are expected to occur in practically all the cities and towns of the Mobile-Alabama-Coosa River Basins and in some cases in the open country. These developments will be related to the population growth. This growth will provide more local markets for agricultural products. At the same time, however, it will provide more competition for labor between agriculture and industry.

PHYSICAL CHARACTERISTICS

Land Base

The 41-county study area contained 16,577,280 acres in 1960. This acreage is held as the base for planning purposes throughout the projected periods. Since 1960 some land in the study area was inundated by large impoundments. This land is treated as special use land rather than showing it as a reduction in the land base.

Land in the study area is divided into five major use categories. Four of these uses are primarily agricultural in nature while the fifth grouping--special use land--is largely related to the nonfarm population of the area. In 1960, 1,103,462 acres, about 7 percent, of the total land area was in the "special use" group, Table 3. Special use areas consist of land in urban areas, roads, airports, industrial uses, areas of land 40 acres or more in size that were

covered by water since 1960, and miscellaneous uses.

Table 3. Present and Projected Land Use, Mobile-Alabama-Coosa River Basins, 1959, 1964, 1980, and 2015

Type of land use	Historical use		Projected use	
	1959	1964	1980	2015
	Acres	Acres	Acres	Acres
Land used for crops	1,785,409	1,475,089	1,412,420	2,193,520
Land used for open pasture	1,834,569	1,892,261	2,375,660	3,804,500
Other farm land	237,056	208,520	181,930	195,845
Forest and woodland	11,616,784	11,706,110	10,870,270	8,253,415
Special use land	1,103,462	1,295,300	1,737,000	2,130,000
Total land area	16,577,280	16,577,280	16,577,280	16,577,280

It is projected that by 1980, 1,737,000 acres, or 10 percent of the land area, will be used for "special use" purposes. By 2015, 13 percent of the land base will be so used. These changes includes land covered by water developments since 1960 or to be covered by 2015. It is expected that most of the large water developments planned for the study area will be completed by 1980. Several impoundments are currently under construction and should be completed in the early 1970's.

Counties with a large and growing population will have a considerable shift in land from an agricultural to a nonagricultural use between now and 2015. For instance, only 23 percent of the land in Jefferson County was in "special use" in 1959. By 1980, 36 percent of the land area of this county is projected to be in the special use group. This will increase to 60 percent by 2015. Several other counties with a rapidly growing population will also have a fairly high percentage change in land use. At the same time, a number of slow

growth counties will loose only a small amount of land to nonagricultural uses.

Even though 13 percent of the land area of the 41 counties will be used for special type services by 2015, 87 percent of the land will be available for agriculture--crops, pasture, woodland. Considerable acreage will likely be used to grow food products for the large population in the study area. The largest single type use will continue to be forest and woodland. However, the woodland acreage in the study area is projected to be reduced by 3.5 million acres between now and 2015. With the use of proper forestry management practices, the reduction in acreage should not result in less timber being produced. In fact, it is anticipated that total forest production will increase as the result of higher unit production rates.

The study area contains 5.6 million acres of land suitable for row crop production. Only about one-fourth of this land is now used for crops. Some of it is in open pasture, but much of it is in woodland. In time, some of this land will move to "special uses" and be lost to agricultural uses. However, with proper planning and the possible use of zoning regulations, much of this land can be retained as very valuable cropland. Some 3.5 million acres of the land usable for crop purposes, out of the 5.6 million acres that now exist in the study area, is expected to be developed for long-time use for crop production and temporary pasture. In addition to the available row crop land in the study area, some 2.5 million acres of land that

is marginal for crops is available for development as open pasture land. Some of this land is currently used for crops and some for pasture but much of it is in woodland.

With proper planning and development, the study area can become a major agricultural area. The land use projected for 2015 should in no way hinder future urban and industrial development of the Basins. The projected land-use pattern shown in Table 3 could fail to become a reality. The projected land-use pattern will be needed for the purposes shown. How well the future population of the study area eats will in part depend on how the land of the area is used. For the projected land-use pattern to become a reality, plans must be made to retain the desirable row crop and pasture lands for these purposes. Conflicts between urban and rural land use must be resolved.

The future gross product of agriculture will likely be small in comparsion to the gross product of industry in the Basins. However, the multiplier effect of local agricultural production will be high; its effect upon the local economy will be much greater than the farm value of the products produced. The future of the land base in the study area rests in the hands of local people. This is as it should be. Desirable farm land should be converted to irrevocable uses only after much thought and proper planning.

Type-of-Farming Areas

The study area varies in topography from mountains to Gulf Coast

Soil types, rainfall distributions, temperatures and growing seasons vary accordingly. For this reason it was necessary to divide the three Basins into six physiographical areas, each one having similar agricultural properties, Figure 2. The areas are commonly called type-of-farming areas. These six areas are: Mountain, Limestone Valley, Piedmont Plateau, Upper Coastal Plains, Black Belt, and Lower Coastal Plains.

Mountain

The mountain area includes the counties of Dawson, Gilmer and Pickens, located in north central Georgia. Gilmer, the northernmost county lies in the Lower Appalachian Mountains. Dawson and Pickens counties, which border Gilmer on the south, are in the transition zone between the Piedmont Plateau area and the Mountain area. For the purpose of this study they were considered mountain counties.

The area is largely comprised of large hills and small valleys which provide only small areas suitable for agricultural production. The soils of this area range from the acid and relatively infertile soils of Gilmer County to the clay, eroded soils of Dawson County. The soils of Gilmer are largely of the Talladega-Fannin series. Pickens is comprised of the Hayesville-Braddock series. The topsoil of these two counties is coarse to loamy in texture. Dawson has soils similar to the Piedmont soils.[1] Poultry is the leading farm

[1]C. B. England, J. H. Gibbs, and H. F. Perkins, Some Morphological, Physical, Chemical and Clay Mineral Characteristics of Several Agriculturally Important Georgia Soils, Agricultural Experiment Stations Bulletin N.S. 26, Athens, Georgia, 1962.

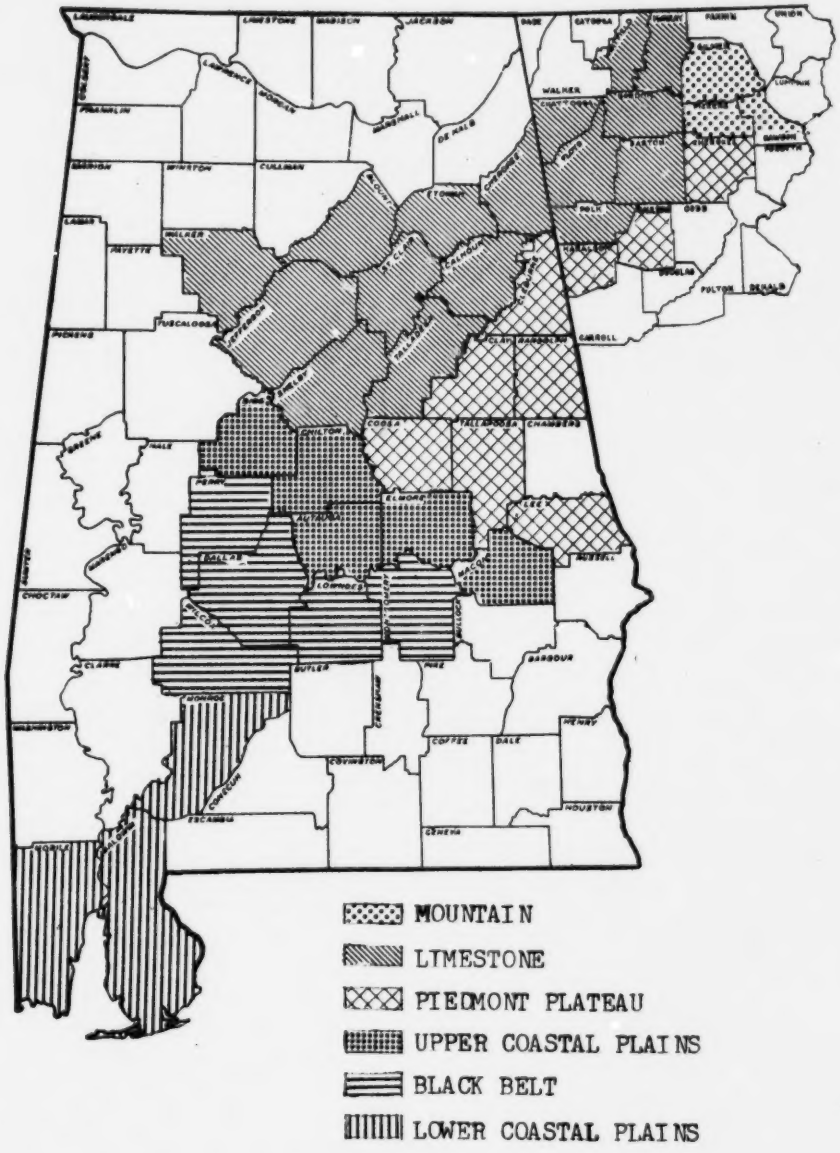

Figure 2. The Mobile-Alabama-Coosa River Basin and Its Type-of-Farming Areas

enterprise in the Mountain area. Very little row-cropping is done in the area.

Limestone Valley

The area defined as Limestone Valley in this study includes counties in both Alabama and Georgia. They are Whitfield, Chattooga, Floyd, Cherokee, Etowah, St. Clair, Shelby, Murray, Gordon, Bartow, Polk, Calhoun, Talladega, Blount, Jefferson, and Walker. The last three counties are not typical Limestone Valley in nature.

The agriculturally important soils of this area consist of irregular strips of valleys and flood plains and hill soils above the valleys. Mechanization is easily adapted to the gently rolling topography. A large portion of the valley is openland and cultivation is intensive. The soils of the valleys are above average in natural fertility as compared with other soils in the two states. All soils in the Limestone Valley area were formed from limestone. They are predominately red and yellow clay soils. The soils of the highland rim uplands associated with the valleys are largely gray silt loams and cherty silt loams.

Annual rainfall in the valley area ranges from 50 to 56 inches; however, there are usually relatively dry periods in late spring and early fall. The growing season ranges from 200 to 220 days.[2]

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[2]Ben T. Lanham, Jr., J. H. Yeager, and Ben F. Alvord, Alabama Agriculture, Its Characteristics and Farming Areas, Alabama Agricultural Experiment Station Bulletin 286, Auburn, Alabama, May, 1963, pp. 14-16.

The leading farm enterprises are cotton and poultry. Livestock production is gaining importance in the area.

Piedmont Plateau

The Piedmont Plateau area of Alabama and Georgia is part of a rolling area extending in a band from Alabama to Maryland. The counties included in this study are: Haralson, Cherokee, Clay, Coosa, Lee, Paulding, Cleburne, Randolph, and Tallapoosa.

The soils are well drained, red sandy loams and clay loams. Much of the area has been row-cropped extensively. Row cropping combined with rolling topography has brought about severe erosion.[3] Farm numbers and farm acreage have dropped in recent years. Much of the rougher sections are now in woods. Cotton has declined in importance. The area now may be classified as a poultry, general farming and dairy farming area. The average annual rainfall for the Piedmont area is about 50 inches. The growing season ranges from 210 to 230 days.[4]

Upper Coastal Plains

The counties included in the study in the Upper Coastal Plains are: Bibb, Chilton, Autauga, Elmore and Macon. This is the oldest and northern most portion of the Coastal Plains. It lies across central Alabama below the Limestone Valley and Piedmont areas. The

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[3]Roy E. Proctor, Type of Farming Areas of Georgia, Agricultural Experiment Stations Bulletin N.S. 48, Athens, Georgia, 1959, p. 35.

[4]Lanham, Yeager and Alvord, Op. cit.

topography is gently rolling to rolling, but some sections are quite level.

The soils of this area are variable, however, they are largely sandy loam on the gently rolling ridge tops and hilly slopes. Stiff red and gray clay soils occur in some sections.[5] Most of the soils respond readily to fertilization and management.

The area receives about 50 inches of rainfall per year. There are relatively dry periods in late spring and early fall.[6] Cotton, corn, poultry, and livestock are the major enterprises.

Black Belt

The five Black Belt counties included in this study are located between the Upper Coastal Plains and the Lower Coastal Plains. The counties are: Perry, Dallas, Wilcox, Lowndes and Montgomery. The area is level to gently rolling. Cotton has been grown very extensively but acreage has declined in recent years. Pasture acreage has increased. In mild winters, pasture in this area may provide year-round grazing.

The soils are of dark colored, calcareous clay and gray to red acid clay. The soils are sticky when wet and hard when dry. Large machinery is required for best preparation of this soil.[7]

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[5]Ibid., p. 106.

[6]Lanham, Yeager, and Alvord, Op. cit.

[7]Soil Areas of Alabama, Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, and Alabama Polytechnic Institute, Auburn, Alabama, 1951.

Rainfall averages 50 to 55 inches per year. There are relatively dry periods in late spring and early fall. The growing season ranges from 215 to 235 days.[8]

With the reduction of row crop acreage, livestock production is increasing in the Black Belt. The area is well suited for beef cattle production. Cotton and corn are still considered major farm enterprises on selected soils of the area. Dairying is also well adapted to the area. Recently soybean acreage has increased rapidly in this type-of-farming area.

Lower Coastal Plains

This area includes the counties of Monroe, Baldwin, and Mobile in southwest Alabama. Most of the soils are sandy loams to loamy sands and respond to good fertilization and management practices. The plowable land, which totals 50 percent of the land area, ranges in slope from 2 to 10 percent.[9]

Rainfall in the area avarages about 60 inches per year.[10] With a longer growing season than other areas in the state, double cropping is often practiced in this area. Many farmers harvest a primary crop in time to plant and harvest a second crop--usually soybeans--before the growing season ends.

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[8]Lanham, Yeager and Alvord, Op. cit.

[9]Soil Areas of Alabama, Op. cit.

[10]Lanham, Yeager, and Alvord, Op. cit.

Farms in Monroe County are of a general type with cotton, corn, beef and hogs as major enterprises. However, Baldwin and Mobile counties have farms on which the production of truck crops, as well as general crops, is of significance. Truck crops include Irish potatoes, green beans, peas, and sweet corn. Farmers in Baldwin and Mobile also produce soybeans, corn, some cotton, and beef and dairy cattle.

The emphasis of this study was on the Mobile-Alabama-Coosa River Basins as a whole. The basic data for the study were developed by type-of-farming areas regardless of the method in which it is reported.[11] The detailed Appendix Tables--Parts III and IV--are reported by Areas and SMSA's. All data were developed by type-of-farming areas and then counties. County data was reassembled in the form shown in the Appendix Tables. This was done in order that these tables will be consistent with work done by another contract for the Federal Water Pollution Control Administration.

USE OF LAND RESOURCES

Traditionally the Mobile-Alabama-Coosa River Basins have consisted of small farms, most of them family farms operated with family labor. Small farms, rolling to rough terrain, and small fields have

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[11] James Ray Barnes, Agricultural Adjustment Potentials of The Mobile-Alabama-Coosa River Basins of Alabama and Georgia, Masters Thesis accepted by the Graduate School of Auburn University, Auburn, Alabama, 1966. This report developed detail budgets by type-of-farming areas. These budgets were used in making farm enterprise projections by counties.

made mechanization of agriculture difficult in much of the northern half of the study area. Rock formations make it difficult to develop major ground water irrigation in this same section of the study area.

Difficulties faced by farm operators in the study area imply that it might be easier to give up farming and find employment in industrial plants. This some farmers have done; many, however, have remained and adjusted their farming operations. Some have increased farm size in order to use modern machinery. Others have given up row crops and turned to poultry and livestock. While there are phyical disadvantages within the study area, accessibility to market gives it some economic advantages.

Considering both the advantages and disadvantages of the study area, one must conclude that it can and will remain an important agricultural section. Adjustments can be made, as already shown by many farmers. The growing population centers provide a nearby market for many products. The nearby agribusiness firms provide farmers with many needed services. Agricultural adjustments already under way point to some of the changes that can be expected in the future. Projections of future crop and livestock requirements point to other adjustment needs.

As the population grows in the United States the demand for food and fiber increases. Likewise, as the World population increases, the export demand for food and fiber produced in this country increases. Also, with an increasing population, increasing incomes, and better knowledge, there will be an increased demand for

the production of more agricultural products for non-food uses. Combined, these needs require large increases in the output of agricultural products. All present indications are that improved technology will enable the production needs of the United States in 1980 to be produced on 294 million acres of harvested cropland. In 1964, 294.6 million acres of cropland were harvested in the United States. However, by 2015 there will be a need for 363 million acres of harvested cropland.

While yields per acre are expected to increase, they are not expected to increase nearly as fast as the overall demand created by the increased population. Other cropland uses, other than harvested cropland, will raise the total cropland needs in the nation to 450 million acres in 1980 and to 566 million acres in 2015. These land needs will require efficient use of land throughout the nation.

For many years the national food and fiber needs have not been great enough to make it profitable for farm operators of the study area to be highly efficient producers. As this need changes, and as commercial farming becomes more profitable, opportunities will exist for the use of agricultural resources to produce at much higher levels than has ever been true in the past. The study area has the resources to produce its share, and in some cases even more, of the nation's demand for agricultural products.

CROPS

Studies by the Soil Conservation Service (Soil and Water Conservation Needs Inventory) reveal that in 1958 there were 5.6 million

acres of Class I, II, and III land in the study area. These lands are commonly referred to as "row crop" land. Under proper management land in these classes can be used for continuous crop farming. In 1958, 33 percent of the "row crop" land available for agricultural uses was used for cropland, 17 percent was used for pasture, 42 percent was in woodland, and 8 percent was used for other purposes. There is more than adequate "row crop" land available for adjustment needs of the study area to 2015 or beyond. However, for a high percentage of the available land to be used there will be a need for land clearing and other improvement practices.

In addition to the "row crop" land in the study area, the 1958 inventory showed almost 2.5 million acres of Class IV land--permanent pastureland. Combined, these land classes provide a base of 8.6 million acres with a potential for agricultural use for crops and pasture. The total land used for crops and open pasutreland in the study area in 1964 amounted to 3.4 million acres, or 40 percent of the potential. The need for Classes I through IV land amounts to 3.8 million acres in 1980 and to 6.0 million acres in 2015. While some Class I through IV land will be lost to non-agricultural development between now and 2015, there seems to be little doubt that the types of land needed will be available. There will be competition for this land for crop and pasture use with its use for forestry.

Row Crops

The term row crops is often used for such crops as corn, cotton,

small grains and soybeans. Cotton has been and still is the No. 1 cash row crop in the study area. Acreages planted to corn and hay crops exceed the cotton acreage but these are not "cash" crops to the extent that all production is for a direct market. Since 1950 many growers with limited cotton acreages have had to switch to other farm enterprises because their cotton acreage allotments were too small to mechanize efficiently. Cotton acreage in the study area decreased by 439,000 acres between 1949 and 1964. Growers that elected to continue in cotton production increased the size of their operation and mechanized. Mechanization forced growers to move their row crops to land best suited for the efficient operation of farm machinery and to use rolling land and hillsides for hay and pasture.

In 1964 cotton occupied about 30 percent of the harvested row cropland in the study area. However, it is expected that cotton acreage will decrease gradually and then level off. Some type-of-farming areas will go completely out of the cotton production business while some other areas will increase production over their present levels. It is expected that per capita consumption of cotton will not decline drastically under the present consumption rate. Even at a lower per capita consumption rate, increased population of the future would use more total cotton than now. Exports of cotton are expected to remain near present levels or to increase slightly. While cotton production can be expected to hold its own in terms of bales produced, acreage is expected to decrease. This will be possible by shifts to the better cotton producing land and better management. By 1980, cotton

will drop to 170,612 acres and occupy only about 18 percent of the harvested row cropland, Table 4.

Table 4. Acreage of Row Crops, Mobile-Alabmma-Coosa River Basin, 1959 and 1964 and Projected 1980 and 2015

Crop	Historical		Projected	
	1959	1964	1980	2015
	Acres	Acres	Acres	Acres
Corn for grain	556,264	311,912	373,286	593,900
Oats for grain	52,292	26,523	15,870	6,640
Sorghum for grain	8,379	2,912	6,201	5,418
Wheat for grain	21,451	31,864	55,240	164,308
Soybeans for beans	88,477	123,492	242,446	590,750
Peanuts, P&T	3,650	1,973	1,340	1,025
Cotton	258,611	253,290	170,612	155,540
Other crops	74,309	75,766	86,000	124,100
Seed crops	6,739	6,288	7,096	12,720
Total	1,070,172	834,020	958,091	1,654,401

Corn has occupied about 37 percent of the harvested row cropland of the study area in recent years. Acreage of this crop is expected to increase about 20 percent by 1980. Increases in acreage planted and in per acre yeilds should more than double corn production by 1980 and give more than a 300 percent increase by 2015. The study area is now a corn deficit area and is expected to remain so, even with a large increase in production. Increases in poultry and livestock to be fed are expected to increase faster than corn production.

Wheat acreages for the nation and even in parts of Alabama are expected to increase greatly in the future due to export demand. Projections for the study area are for a 73 percent increase in acreage between 1964 and 1980 and then to triple between 1980 and 2015.

The major increases will be in regions of the study area where wheat can be double-cropped with other crops. However, development of new early maturing varieties of wheat and/or new varieties of soybeans, which would make it more profitable to grow wheat and soybeans in a double-cropping system, could result in a substantial increase in the projected wheat acreage.

Soybean acreage, because of the importance of beans for oil, high protein feed, and a source of protein for human food, is expected to increase at a fairly rapid rate. On most farms, beans will compete with corn for available resources because the margins of profit for these two crops are almost equal. Present and future market potential for soybeans appears to be almost unlimited. It is expected that soybean acreage in the study area will double between now and 1980. Actually, the acreage may well go above this in the late 1960's and early 1970's and then level off to this figure. As production per acre increases, acreage may decline. The availability of land level enough to operate large equipment will limit soybean production in the northern half of the study area.

A number of other row crops will continue to be grown in the Mobile-Alabama-Coosa River Basins. These will include corn and grain silage, seed crops, small acreages of peanuts, and miscellaneous crops. Acreages of other row crops are so small that they have little or no impact on the total agricultural economy of the study area.

A recap of the row cropland requirements for the study area is shown in Table 4. In addition, detailed data on land requirements and

production are shown in a separate volume--Part III-Statistical Summary. Part III contains tables on use of land in farms, both historical and projected, and production of major crops. Two additional volumes, Part IV-Section A and Part IV-Section B contain detailed data on land use by major crops from 1949 through 1964. Data in Parts III and IV are reported by counties for each of the 41 counties in the study area.

Corn production in the study area amounted to 10.5 million bushels in 1964. Projections are that corn production will reach 24.2 million bushels by 1980 and 44.5 million bushels by 2015. Increased production resulted from increased acreage and higher yields. Corn yields in the study area averaged 34 bushels in 1964. They are projected at 65 bushels in 1980 and 75 bushels in 2015. Other crops are expected to show similar increases in yields due to improved technology and better management. Included in the "better management" will be a a large increase in the use of agricultural chemicals.

Forage Crops

The history of the study area is one of deficit production of hay and other forage crops. During the period 1959-64, hay [illegible] tion was about 50 percent of the needs. Some of the hay shortage was compensated for by extensive use of woodland pasture and hay imports from other areas. Some animals were not adequately fed. Projections are that hay acreage will not increase during the [illegible]

projected time periods, Table 5.

Table 5. Acreage of Forage Land, Mobile-Alabama-Coosa River Basins, 1959, 1964, 1980, and 2015

Kind of forage	Historical		Projected	
	1959	1964	1980	2015
	Acres	Acres	Acres	Acres
Hay crops[1/]	217,019	262,059	188,220	219,550
Cropland used for pasture[2/]	660,043	589,299	916,340	1,503,100
Other openland pasture	1,174,526	1,302,962	1,459,320	2,301,400
Woodland pasture	1,428,214	1,334,524	1,048,720	575,510
Total forage land	3,479,802	3,488,844	3,612,600	4,599,560

1/Some additional hay may be cut from cropland pasture and other pasture in the future.

2/Some of the projected cropland used for pasture may, in fact, be planted to crops and harvested for drylot feeding. Also, some silage included under "other crops" may be planted in row cropland and fed as forage.

It is projected that the type of hay will change and that high fertilization practices will be used along with improved management. These changes should double hay yields per acre in 1980 and nearly triple it by 2015. Even so, the hay deficit will still be large in the futue due to more livestock to be fed. With higher fertilization of pasture in the future some surplus hay may be harvested from pasture. Such hay, if any, was not included in the harvested hay acreage in Table 4, or in county data shown in Part III.

Silage has been an important source of roughage on relatively few farms in the study area. Its use has been principally for dairy cattle. Past acreage used to produce silage and that to be used in the future is included with "other crops" under row crops.

Projections are that roughage for dairy cows in the future will be largely silage. Many feeder steers will also be fed silage. Close to 100,000 acres of good cropland will be required for silage production in 1980; 132,000 acres will be needed by 2015. Part of this acreage will come from the projected "other crops". The remainder will be from land listed as cropland pasture.

Cropland used for pasture is to increase from 589,300 acres in 1964, to a projected 916,340 acres by 1980 and to 1,503,100 acres by 2015. As stated above, some crops on this land may be harvested row crops fed to animals in feed lots. Other acreage may be double-cropped by using cool-season or winter grazing crops of small grains followed by a summer temporary grazing crop such as millet. Other acreages will be planted to only a summer or winter grazing crop without being double-cropped.

Other open pasture land increased from 1,174,526 acres in 1959 to 1,302,962 acres in 1964. Approximately one and three-fourths to two acres of this type "permanent pasture" have been used per mature beef animal equivalent for grazing. Some 50 percent of the other pasture is classed as "improved" permanent pasture. It is projected that acreage of "other pasture" will increase greatly in the future. Under good management practices this acreage would have a much higher carrying capacity than at present. Also, in seasons of heavy rainfall, some surplus grazing will be produced and cut for hay.

Historically, some woodland in the study area has been used for timber production and for cattle grazing. This practice is expected

to continue but at a decreasing rate. By 2015, less than one-third acre of woodland pasture per mature beef animal equivalent will be used. Most woodland pasture, as a part of total farm land, will be on land too rough to clear and develop as open pasture. In some regions of the study area the use of woodland grazing may increase over any levels used in the past. In some cases, this type grazing might be on non-farm land. This possibility anticipates that a number of watershed projects will be developed where trees on woodland areas will not be as thickly spaced as would be necessary for maximum wood production. These areas may well be used for summer cattle grazing.

To provide the open farm land needed for crops and pasture, considerable woodland must be cleared and developed. Open farmland used for crops and pasture in 1964 amounted to 3.4 million acres. An additional 400,000 acres will need to be cleared and developed in the 41-county area by 1980. Between 1980 and 2015, and additional 2.2 million acres will need to be cleared and developed. Most of these future developments will be needed for use as "crop land pasture" and "other pasture" for the production of forages.

Fruits, Vegetables, and Ornamental Crops

The 2.4 million people living in the study area in 1965 ate an average of 597 pounds of fresh and processed fruits, nuts, and vegettables per capita on a farm weight basis. This amounted to 716,400 tons of fresh and processed fruits and vegetables consumed in the

study area in 1965. It is projected that people in the study area will eat 930,000 tons of fresh and processed fruits and vegetables in 1980 and 1,500,000 tons in 2015.

Per capita consumption of fresh and processed vegetables amounted to 285 pounds in 1965. Only 28 percent of this amount was produced in the study area in 1965. The projections show that the study area is expected to produce some 47 percent of its vegetable tonnage needs by 1980 and 75 percent by 2015. The study area produced a much smaller amount of its fruit needs in 1965 and will continue to produce a low percentage of its needs in the future. Due to climatic conditions, it could never produce some of the products it uses--citrus fruits, for example. On the other hand, farmers may produce more of some products than can be consumed locally and will export to other market areas. The study area is now, and will continue to be, the State's most concentrated fruit and vegetable market. This is due to the fact that five of the six largest cities in Alabama are located within the study area.

Fruits and vegetables are high-value crops on a per acre basis. This implies that with a good local market, more of these products should, and can, be grown in the study area.

A number of limitations will prevent the study area from producing in line with its needs. Topography, soil, water for irrigation, and competition for labor are major factors. Rough topography leads to small fields and increases the difficulty of using machinery and equipment, especially in the northern half of the study area.

Future machinery needs can best be met with areas of 30 to 50 acres of relatively level land in one field. All counties in the study area have spots of highly productive fruit and vegetable lands. However, rolling terrain and limited water presently limit their use in most counties for fruits and vegetables. Monroe, Baldwin, and Mobile counties in the extreme southern end of the study area are expected to become the largest producing area and will become the future site for a number of food processing plants.

Water for supplementary irrigation will be necessary for successful commercial vegetable production in the future. Water from wells and farm ponds is limited in most of the study area for this purpose. Several dams now impound large areas of water in or adjacent to the study area. Three additional large impoundments are under construction. Normally, the study area receives about 50 to 55 inches of rainfall annually. This fact, coupled with the existing and potential impoundments, gives the study area economic potential for fruit and vegetable irrigation development.

In 1959, there were 42,560 acres of potatoes, sweet potatoes, and commercial vegetables planted in the study area. Commercial vegetables included such items as tomatoes, sweet corn, cucumbers and pickles, snap and lima beans, watermelons and cantaloupes, cabbage, field peas, sweet peppers, pimento peppers, squash, okra, and turnips. By 1964, the total acreage of potatoes, sweet potatoes, and commercial vegetables had dropped to 38,945 acres, an 8 percent drop. However, due to increased yields, tonnage was up slightly.

Practically all types of commercial vegetables as well as sweet potatoes had shown a reduction in acreage harvested.

It is assumed that the reduction of fruits and vegetables over the last few years was due primarily to a shortage of hand labor. Future production must be mechanized and must fit the grade and quality requirements of highly specialized fresh and processed markets. These requirements will make it necessary to use land areas of the proper size, slope, and soil type to fit mechanization. Irrigation water will be necessary. Proper management and capital must be available. The total land area devoted to potatoes, sweet potatoes, commercial vegetables, and fruit in 1964 amounted to 81,000 acres. This acreage will increase to 105,000 acres by 1980 and to 165,000 acres by 2015.

Production and marketing of ornamental specialty crops experienced a decline in acreage in the study area during the period 1959, 1964--from 4,800 acres down to 3,494 acres. However, income to producers increased. Many small producers (five acres or less) shifted from producing for a wholesale market to a retail market outlet. Much of this shift has been around the large cities within the study area and has been due to competition from large growers in the southern part of the study area. Some growers discontinued production due to age, labor shortage, and competition in the wholesale market. Residential, industrial, commercial, and recreational developments and construction have stimulated the growth of retail marketing outlets. Consumer demand for plant material, garden supplies,

and services encouraged the conversion from grower--wholesale operations to retail marketing.

The projected growth in population, housing, and industrial development will stimulate increased future use of ornamental specialty crops in the study area. To meet the projected requirements for these crops, the acreage will need to increase to 4,400 in 1980 and to 7,380 by 2015. These acreages will not make the study area self-sufficient for these products.

LIVESTOCK AND POULTRY

In 1965, consumers in the United States spent $77.6 billion for farm food products. A large part of this total went for dairy products, beef, pork, poultry, eggs, and other livestock products. Farm operators of the 41-county study area have been aware of the growing demand for these food products. This awareness has been expressed in the large growth that has occurred in the production of livestock and poultry in the study area. It has not been across-the-board growth; milk, pork, lamb, and mutton production has decreased. Poultry meats and eggs have shown phenomenal growth. Livestock and poultry will remain very high-growth industries. The large and growing local markets in the study area presents both an opportunity and a challenge to future producers.

Dairy

The number of dairy cows in the 41-county area decreased 20 percent from 1959 to 1964, Appendix Tables (Part III by counties, areas

and total). The decrease was due to the disappearance of the "family cow" and to a reduction in the number of Grade A dairy farms. During the period that cow numbers decreased 20 percent, milk production decreased only 10 percent. While Grade A dairies were reducing in numbers, dairymen who remained increased their herd size and production per cow. Grade A milk production increased while total milk production decreased. With the disappearance of the family cow, milk production in the study area has shifted almost entirely to the Grade A, or fluid milk, industry.

While Grade A production has been increasing, it is short of market needs. Milk is imported into the major urban centers of the study area from several nearby counties and two neighboring states. Of the six type-of-farming areas in the study area, only the Black Belt is a surplus milk producing area. In spite of market needs, nearly 40 percent of the producers in the area went out of business between 1959 and 1964. Generally, those who left the business operated smaller-than-average units, were older dairymen, and lacked the capital or management to make the adjustment for a profitable size dairy operation. Average investment per Grade A dairy farm in the study area ranges from $100,000 to $125,000. Land values of a number of dairy farms near large urban areas average considerably above normal land values for farming purposes.

Consumption of fluid milk is projected to increase by 35 percent from 1965 to 1980, and to double by 2015. Consumption of other dairy products is expected to follow this same pattern. Milk

production in the study area is closely tied to the Grade A market and is projected to remain that way. By 1980, the number of Grade A dairy farms is projected to number only 550--down from 709 in 1964. The projection is for only 450 dairies in the study area in 2015. These farms are expected to average 100 cows by 1980 and 180 cows by 2015. While some dairies will operate with small herds most will be relatively large and will be handled as drylot operations. Some herds will include 200 to 400 cows.

Even with a decrease in dairy farms and cow numbers, milk production is projected to increase by 28 percent from 1960 to 1980, and by 72 percent from 1980 to 2015. This increase will not equal the projected growth in milk consumption. Therefore, the study area will remain a deficit milk producing area.

Beef Cattle

Alabama and Georgia's beef cattle industry has undergone rapid and rather continuous expansion since 1940. Brood cow numbers increased in Alabama from 133,000 in 1940 to 830,000 head at present. Farm income in Alabama from the sale of cattle and calves rose from $7.6 million in 1940 to more than $100 million at present.

Past and projected changes in beef brood cow numbers and beef and veal production in the 41-county study area are as follows:

Year	Beef cow numbers	Beef and veal production, pounds
1959	307,834	246,273,404
1964	404,095	244,261,928
1980	697,345	514,749,850
2015	1,343,130	1,279,745,872

Per capita consumption of beef and veal in the study area is well below the national average. Even at a low consumption rate, production in the study area is well below consumption. As per capita incomes rise, per capita consumption of beef and veal may be expected to approach the national average.

Both beef cow numbers and beef and veal production are projected to continue increasing through 2015. Beef and veal production is projected to increase much more than cow numbers because more beef per cow will be produced. Up to now, most of the beef industry in the study area has been a brood cow-calf operation. In the future, it is expected that more cattle will move into feedlots and be finished to heavier weights locally. Almost any county in the study area may have one or more small feedlots. Total beef production in 2015 is expected to slightly exceed demand. The increased production will add many more dollars to the local economy.

Swine

The swine industry in the study area has been steadily decreasing in numbers for the past several years. The number of head of breeding stock in the study area decreased from 48,335 head to 29,737 head from 1959 to 1964, and pounds of pork produced decreased 25 percent. The study area currently produces less than a third of the pork it consumes.

The many small farms within the study area have an opportunity to enter the swine business. A study of farm budgets show this to

be an enterprise that can be quite profitable in many regions of the study area. It is expected that this industry will grow most under a confined feeding arrangement.

Projections are that pork production will grow in the study area and will reach 124 million pounds in 1980 and 278 million pounds in 2015. Even with this growth, the study area will be producing only 60 percent of the pork it is expected to consume in 2015. One of the major factors holding back pork production will continue to be the shortage of grain. Should there be a breakthrough in ways of lowering transportation costs for imported corn, or should there be a large growth in the interest of the feed industry in the promotion of an integrated swine industry, future production could well exceed the projected output. Based on what is known now, it appears that the projections are in line with what can be expected. However, swine production does have a great potential. Should the midwest fail to increase its production to meet needs, the study area can be expected to help fill any void that may develop.

Poultry

The integrated, commercial poultry industry is a young and growing business in the study area. Tremendous growth is taking place in broiler, egg, and turkey production.

The 41-county study area produced and sold 107 million broilers in 1959, and increased this number to 148 million in 1964. This type of growth in broiler production and marketing has continued since

1964. Broilers from the study area are marketed locally, in other states, and in some foreign countries. While some broilers are produced in most of the 41 counties in the study area, by far the largest number are produced in the upper half of the area.

Egg production increased in the study area from 681 million in 1959 to 1.6 billion in 1964. Eggs produced in the study area are sold locally and in many parts of the Northeast.

Turkey production in the study area, while still small, definitely is rising. This is largely due to the financing and promotion work of the feed industry. Turkeys increased from 95,241 in 1959 to 526,447 in 1964. The number of turkeys raised here again increased in the study area over the past two years.

Poultry has long been a prestige meat and has now become a preference meat for many people. Per capita consumption continues to increase each year. In the future more people will be eating larger amounts of poultry meat and big increases in production will be needed.

Projections for 1980 and 2015 for the study area are as follows:

Item	1980	2015
Broilers sold, number	354,049,000	1,189,915,000
Average number of layers	14,232,840	28,197,600
Turkeys produced, number	796,480	2,220,230
Eggs produced, number	2,996,632,890	6,316,605,500

Meeting the projections for livestock and poultry will be a large task for farm operators of the study area. In most cases the future production will occur more as a "factory" type production than as a "farm operation" as we now think of these terms.

Confinement of large numbers of animals and birds to small areas or houses will be the rule rather than the exception.

REQUIREMENTS TO MEET PROJECTED ADJUSTMENTS

For the United States to provide adequate food for 254 million people in 1980 and 459 million in 2015 and also accept its responsibility of helping feed other countries, production must be greatly increased. Farm operators must accept certain responsibilities in meeting the needed adjustments. However, the nonagricultural sector of the economy must also accept some responsibilities.

Adjustments in the 41-county study area will come about slowly. Farm numbers will continue to decrease. Of each two boys now living on farms, only one will be needed as a replacement for present farmers who retire or leave farming. However, the boys growing up on farms, but not needed as future farmers, have an excellent opportunity to use their background, with proper education, to become a part of a growing agribusiness industry. Many farm operators of the future in the study area will live in urban sections. Also, many people who work on farms will live in urban sections or rural nonfarm communities and commute to work.

Farms will become larger in size. However, no additional land in the study area will be added to present farm land between now and 1980. The increase in farm size will largely be a process of dividing the same land area among fewer farm operators. Between 1980 and 2015 additional land will have to be added to the present farmland base.

The acreage of harvested row cropland will need to increase

about 124,000 acres between now and 1980. Some 500,000 acres of pastureland will need to be added to present pasture acreage. This will require land clearing and reclamation and the use of some large earth-moving machinery.

Since farmland use will change little between now and 1980 and production is projected to increase 35 to 40 percent for most items, the major need will be the adoption of more technology on farms. Full use must be made of mechanization. Hand labor will be reduced to a minimum. Machinery and equipment will be needed for all phases of production and harvesting of all crops. Automation must be used in handling and feeding livestock. Many jobs now performed by farmers will need to be done in the future by agribusiness firms. Field size will need to be increased and developed for proper use of mechanization.

Farm operators must remain alert to new developments and adopt then where applicable. Adoption of improved seed and plants, as well as full use of fertilizers, herbicides, pesticides, and other chemicals, will be necessary. Supplemental water must be used to irrigate all truck crops and some row crops to improve quality and product yield. Profitable management practices in beef, dairy, swine, and poultry industries must be adopted.

Farm operators must remain alert to the things happening beyond their line fence. They must produce the grade and quality of products demanded by the market. They must become highly qualified businessmen capable of handling business investments of $200,000 to

$500,000. Farm operators must become better decision-makers. They will need a good formal education and continue to participate in adult educational programs. For farm operators who develop managerial skills the economic rewards will be equal to those of the non-agricultural sectors of the economy.

Few, if any, large industries are completely self-contained in their operation. They depend upon many professional, business, and industrial concerns to supply and service them. This is also rapidly becoming the case with agriculture. Farm operators depend on many services from outside their farm. This will become even more true.

As poultry and livestock industries expand, the study area will depend on outside areas for large amounts of grain and some roughage. Improvements will be needed in transportation and handling facilities. Full use of impounded water in the study area is needed not only for transportation and industrial purposes but for agricultural uses as well. Leadership in this development may need to come first from nonfarm groups. Many routine farm jobs need to be automated. Work of personnel in engineering firms in the study area could do much to solve these problems.

Many agricultural enterprises have grown into big businesses with help from outside firms. The study area's poultry industry is an example. Farmers are ill equipped to finance, promote, and carry out the needed research to develop an enterprise from a small business to a major one. Opportunities exist in the study area for immediate expansion in swine, truck crops, beef cattle, small, grains,

and soybeans.

Much planning is now going on in the study area. This should include long-range farm planning and agricultural land use. Scientific advances and demands for new services have changed the roles of people, land, technology, and capital. To understand farming and agribusiness requires a change in the minds of people, which can come about through education and close working relations. Homemakers want more food products with built-in services that involve processing and developing new food products. Farmers can do only limited things to meet these demands. Nonfarm people must realize the responsibilities of processors, wholesalers, and retailers in meeting these needs. These needs should be a part of the long-range plans of the study area.

Urban, industrial, and agricultural development are not separate and independent. In the future it will become increasingly difficult to know where one sector stops and the other begins. Both urban and rural people must develop a better understanding and working relationships.

FORESTRY

Of the 16.6 million acres of land in the 41-county study area, 11.6 million acres were forested in 1959 and 11.7 million acres, or 70.6 percent, were forested in 1964. Projections are that the acreage of forested land will reduce to 10.9 million acres in 1980 and reduce further to 8.3 million acres in 2015, Table 3.

Forestry land in some cases is a part of farmland and in other cases it is non-farmland. The present and projected divisions of woodland between farm and non-farm ownership is as follows:

Year	Farm woodland	Non-farm woodland
	Acres	Acres
1959	3,611,148	8,005,636
1964	3,407,370	8,298,740
1980	2,912,240	7,958,030
2015	2,077,400	6,176,015

In 1959, some 48 percent of all farmland was classed as woodland by the Census of Agriculture. In 1964, 49 percent of all farmland was listed as woodland. Two factors are involved in the amount of farmland that is shown as woodland. First, due to the topography of the study area farm operators must own some woodland as a matter of getting the amount of open land desired. Rough topography seldom permits any one farm to be developed as a complete open area of crop and pasture land. Second, the Census of Agriculture considers all land under the control of a farm operator as farmland, unless some of the land is being held for nonagricultural purposes. When a farm operator owned an unusually large acreage of woodland, this was often considered as nonagricultural and, thus, nonfarm land.

In the future, the percentage of farmland devoted to woodland is expected to decrease. As farm operators need additional openland they will "clear up" land of Classes I-IV for this purpose. Also, more woodland that has been classed as farmland in the past may well be called nonagricultural land in the future. Most farm operators

have not given attention to their woodland in the past. In the future farm woodland will be given better management. However, this in many cases may not be done by the farm operator himself, but may be done under some type of contract with wood using industries. This separation in management may lead to a lower percentage of farm woodland and to a higher percentage of all woodland being classed as nonfarm woodland. The 8.3 million acres of woodland projected for 2015 is about as low as woodland acreage can ever go in the study area due to the physical characteristics of the area without respect to the division of control between farm and nonfarm.

Based on data for 1963 from the U. S. Forest Service, National Forests occupied 3.8 percent of the study area woodland. Other public ownerships accounted for 1.6 percent of the commercial woodland. The wood using industry owned 18.2 percent of the woodland, farmers 29.2 percent, and other private holdings accounted for 47.2 percent of the woodland. It is expected that ownership by the forest industry will increase overtime and private ownership will decrease.

Growing stock in the 41-county study area decreased from 1954 to 1963, Table 6. This was true of all growing stock and of soft wood. However, the volume of hard wood growing stock increased. The volume of sawtimber increased in total and by species.

Table 6. Total Volume of Growing Stock and Sawtimber by Species Group, Mobile-Alabama-Coosa River Basins, 1954 and 1963

Item	1954	1963
Growing Stock (Million Cubic Feet):		
All species	7,555.3	6,677.6
Soft wood	4,588.7	3,466.5
Hard wood	2,966.6	3,211.1
Sawtimber (Million Board Feet):		
All species	18,199.3	19,698.5
Soft wood	10,760.2	11,644.0
Hard wood	7,439.1	8,054.5

Source: Alabama and Georgia Forest Service Reports by Counties.

The annual cut of all growing stock, and of sawtimber, decreased from 1954 to 1963, Table 7. In terms of all growing stock, the cut of soft wood decreased, but the cut of hard wood increased. From 1954 to 1963 the annual cut of sawtimber decreased for all species and by species group.

Table 7. Annual Cut of Growing Stock and Sawtimber, by Species Groups, Mobile-Alabama-Coosa River Basins, 1954 and 1963

Item	1954	1963
Growing Stock (Million Cubic Feet):		
All species	292.2	275.9
Soft wood	205.1	169.7
Hard wood	87.1	106.2
Sawtimber (Million Board Feet):		
All species	1,170.8	680.4
Soft wood	799.8	394.8
Hard wood	371.0	285.6

Source: Alabama and Georgia Forest Service Reports by Counties.

Forest land in the study area is currently estimated to be growing about one-half cord of wood annually. This land area has a

potential to produce one cord per acre or more under proper management. The present annual cut amounts to an average of two-tenths cords per acre for the total woodland acreage. Pulp mills in the study area and nearby areas are increasing their need for timber. New mills have recently started and other plants are being built. These changes will increase the demand for pulp wood in the study area. It is expected that the demand for pulp wood in the study area and nearby areas will increase 50 percent between 1964 and 1968 largely due to four new mills that have recently begun or will be in operation by early 1968.

In the face of decreasing forest land and increasing wood requirements, woodland owners need to increase productivity. The more difficult area for increasing productivity lies with the small forest landowner. The educational arm of private, state, industrial, and federal organizations and agencies must be extended to the small forest land ownerships in order to help them to substantially increase productivity. Changing technology, both in management and harvesting, must be understood and accepted.

SUMMARY AND CONCLUSIONS

The Mobile-Alabama-Coosa River Basins, as used in this study, includes 13 Georgia counties and 24 Alabama counties that are a normal part of the drainage area of the three river systems. In addition, four counties--Blount, Jefferson, Mobile and Walker--were added to the study area because of their particular relationship to the Basins with respect to population growth and potential water

use from these river systems. Combined, the study area consisted of 41 counties in two states. In 1964, 92 percent of the land in the study area was used in agricultural and forestry production.

The study area is growing rapidly in population, urban development, and industrial expansion. The 1965 population of 2.4 million people is expected to reach 3.1 million by 1980 and 5.0 million by 2015. Along with population growth will come many other developments that will use land. While "special use" or service land now uses only 8 percent of the study area's land base, these uses are projected to require 10 percent of the land in 1980 and 13 percent in 2015.

The population of the study area provides a ready market for many locally produced farm products. However, many products are produced for a much larger market. Cotton and soybeams are used locally and also are exported to several foreign countries. Poultry and eggs are sold in many Northeastern states. Broilers enter foreign trade. Consequently, the agriculture of the area is much more closely tied to national and international needs than to local needs.

The acreage of land used for row crops is projected to increase in the study area by only 15 percent from 1964 to 1980--but to increase by 98 percent between 1964 and 2015. Most of the increase will occur in corn, wheat, soybeans, and in "other crops", especially corn silage. Such crops as oats, grain sorghum, and cotton are projected to decrease in acreage from their present level. Yields of all crops are projected to increase significantly, assuming that

farmers use known and newly developed technology and services. Increased yields per acre and increased acreages will result in greatly increased production of some crops, corn and soybeans for example.

Forage crops and pasture have increased in the study area for the past several years. This trend is projected to continue. Forage land amounted to 3.5 million acres in 1964, and is projected to reach 3.6 million acres by 1980 and 4.6 million acres by 2015. The beef cattle industry will use most of the forage land or its production.

The 41-counties studied are somewhat limited in ability to expand fruit and vegetable production. Topography, climate, soil, water, and competition for labor are factors that will limit production. Yet, this is a growth area with a nearby market. People living in the study area ate 716,400 tons of fresh and processed fruits and vegetables in 1965. It is projected that people living in the study area will eat 930,000 tons of fresh and processed fruits and vegetables in 1980 and 1,500,000 tons in 2015. Not all of these products can be produced in the study area. Much of it, however, can be. The total land area devoted to potatoes, sweet potatoes, commercial vegetables, and fruit and nuts in 1964 amounted to 81,000 acres. This acreage will increase to 105,000 acres by 1980 and to 165,000 acres by 2015.

Most dairy cows in the study area are in Grade A dairy herds. Family cows have greatly decreased in numbers. There were 709

Grade A dairy farms in the study area in 1964. The number of dairy farms is projected to number only 550 in 1980 and 450 in 2015. These farms are expected to average 100 cows by 1980 and 180 cows by 2015. Even with the decrease in number of dairy farms, Grade A milk production has been increasing. This has been due to increased production per cow. While Grade A production has been increasing it is short of market needs within the study area. Consumption of fluid milk is projected to increase in the study area by 35 percent from 1965 to 1980, and to double by 2015. Milk production will increase in the area but it will not equal the projected growth in consumption. Therefore, the study area will remain a deficit milk producing area.

Beef brood cow numbers are projected to increase 73 percent between 1964 and 1980 and to double between 1980 and 2015. Beef and veal production is projected to increase at a faster rate than brood cow numbers. More of the calves produced in the study area are expected to go into feed lots for finishing. Any county in the study area may be expected to have one or more small feedlots in the future.

The study areas swine production has been declining for several years. However, this trend will reverse by 1980 and swine production will increase further by 2015. This enterprise offers good opportunities to small farmers and could and should develop in cooperation with other phases of agribusiness.

Tremendous growth has taken place in broiler, egg, and turkey

production. In 1959, 107 million broilers were produced and sold in the study area; this increased to 148 million by 1964. Increases have also been made with eggs and turkeys. Projections indicate that 354 million broilers will be produced in the study area in 1980 and 1.2 billion by 2015. Egg production is projected to reach 3.0 billion by 1980 and 6.3 billion by 2015.

Some 71 percent of the study area is currently in forests. By 2015, only 50 percent of the current land area of the 41-counties is projected to be commercial forest land. Present timber production amounts to approximately one-half cord per acre per year. One cord or more per acre is possible with good management.

Farmers in any area cannot compete successfully in the production of agricultural products until there are available efficient and competitive sources of production goods and services and adequate marketing, processing and distribution systems for their products. The challenge to the business leadership of the study area is to stay abreast of agricultural adjustments that suggest agribusiness development and expansion opportunities. If nonfarm business leaders do not accept this challenge, then farmers must combine to do it themselves or go out of business. The agricultural land of the study area is important to the total economy. It will become more important in the future. This will be true even though income from farm sales will decrease in comparison to industrial sales. However, agriculture and industry in the study area can combine to provide a much stronger economic base than would be possible from either alone.